

Title (en)
High-voltage semiconductor devices

Title (de)
Hochspannungshalbleiteranordnungen

Title (fr)
Dispositifs semi-conducteurs à haute tension

Publication
EP 1521307 A2 20050406 (EN)

Application
EP 04029960 A 20020816

Priority

- EP 02255728 A 20020816
- US 94842201 A 20010907

Abstract (en)
A high-voltage transistor with a low specific on-state resistance and that supports high voltage in the off-state includes one or more source regions disposed adjacent to a multi-layered extended drain structure which comprises extended drift regions separated from field plate members by one or more dielectric layers. With the field plate members at the lowest circuit potential, the transistor supports high voltages applied to the drain in the off-state. The layered structure may be fabricated in a variety of orientations. A MOSFET structure may be incorporated into the device adjacent to the source region, or, alternatively, the MOSFET structure may be omitted to produce a high-voltage transistor structure having a stand-alone drift region.

IPC 1-7
H01L 29/78; H01L 29/41; H01L 29/423

IPC 8 full level
H01L 21/336 (2006.01); **H01L 29/06** (2006.01); **H01L 29/40** (2006.01); **H01L 29/78** (2006.01); **H01L 29/786** (2006.01); **H01L 29/861** (2006.01); H01L 29/417 (2006.01); H01L 29/423 (2006.01)

CPC (source: EP US)
H01L 29/0886 (2013.01 - EP US); **H01L 29/402** (2013.01 - EP US); **H01L 29/407** (2013.01 - EP US); **H01L 29/7802** (2013.01 - EP US); **H01L 29/7813** (2013.01 - EP US); **H01L 29/7824** (2013.01 - EP US); **H01L 29/7825** (2013.01 - EP US); **H01L 29/86** (2013.01 - EP US); **H01L 29/861** (2013.01 - EP US); H01L 29/0653 (2013.01 - EP US); H01L 29/41741 (2013.01 - EP US); **H01L 29/4232** (2013.01 - EP US); H01L 29/42368 (2013.01 - EP US); H01L 29/4238 (2013.01 - EP US); H01L 2924/0002 (2013.01 - EP US)

Citation (applicant)

- US 4796070 A 19890103 - BLACK ROBERT D [US]
- EP 1073123 A2 20010131 - TOSHIBA KK [JP]
- GB 2309336 A 19970723 - FUJI ELECTRIC CO LTD [JP]
- WO 0033385 A1 20000608 - INFINEON TECHNOLOGIES AG [DE], et al

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

DOCDB simple family (publication)
US 2003047792 A1 20030313; **US 6815293 B2 20041109**; EP 1300886 A2 20030409; EP 1300886 A3 20040218; EP 1521307 A2 20050406; EP 1521307 A3 20080806; JP 2003152179 A 20030523; JP 2004297085 A 20041021; JP 2011151408 A 20110804; JP 4744057 B2 20110810; JP 5354808 B2 20131127; US 2003047788 A1 20030313; US 2003151110 A1 20030814; US 2004232486 A1 20041125; US 6555873 B2 20030429; US 6798020 B2 20040928; US 6987299 B2 20060117

DOCDB simple family (application)
US 13511402 A 20020430; EP 02255728 A 20020816; EP 04029960 A 20020816; JP 2002258263 A 20020731; JP 2004179761 A 20040617; JP 2011067944 A 20110325; US 36137703 A 20030210; US 86898404 A 20040616; US 94842201 A 20010907